

H-3 ROAD DITCH TURNOUTS

PURPOSE & APPLICATIONS

A ditch turnout consists of a stable ditch, a turnout berm and a trench outlet used to store and release road runoff into existing stable natural vegetated buffer area. The outlet, a level spreader, is constructed with the natural topography in mind, across the slope, consisting of a combination of stone and existing natural vegetation used to disperse, filter and spread concentrated flow over a receiving area. See the LEVEL SPREADER BMP for its design.

Turnouts reduce the amount of water in a long ditch and the movement of sediment by filtering out sediment, soluble pollutants and sediment attached pollutants by filtration, infiltration, absorption, adsorption, decomposition, and volatilization.

- Use only where drainage areas being treated are less than 2 acres. For greater drainage areas, use vegetated waterways, lined waterways, or grade control structures.
- Obtain an easement for flows that will cross an adjoining property before being intercepted by a stable drainageway capable of handling the added flow.

CONSIDERATIONS

- If grass cover needs to be installed in the ditch and/or the receiving area, construction will be limited to the growing season. Final seeding should be completed by September 15.
- The receiving area must maintain the natural contour across the slope to insure uniform distribution of flow, otherwise water will channelize and the structure will fail.
- Stable receiving swales should exist below the receiving area as concentrated flow can be expected to start occurring within 300 feet.
- Provisions shall be made to maintain the undisturbed nature of the vegetation in the filter area as it can aid in slowing and dispersing flows.

SPECIFICATIONS

Design Criteria

Ditch Section: The ditch that conveys the road runoff to the turnout berm and trench must be stabilized with either vegetation or riprap. Refer to the VEGETATED WATERWAYS BMP or RIPRAP REINFORCED BMP.

Turnout Berm Section: The turnout berm that directs the ditch flows to the trench receiving area shall be stabilized in conjunction with ditch stabilization. The side slopes of the berm shall be 2H:1V at the maximum. The minimum height shall be 2 feet.

Trench Receiving Area: The trenches shall be constructed along the existing contour. It shall be 15-20 feet long, at least 7 feet wide across the top and a least 2 feet deep. The trench shall be filled with 4-6 inch clean stone.

Natural Vegetated Buffer Area: The receiving area shall have a regular topography to allow the conversion of surface flows into subsurface flows through infiltration and to prevent undue flow concentration before entering a stable watercourse. And the receiving area shall be stable prior to the construction of the ditch turnout.

Uphill Runoff: Runoff from uphill side slopes of road shall not be allowed to drain into ditch turnouts. These are only appropriate for use in controlling road runoff in small sections of roadway. The intent of ditch turnouts is to remove sediment from road runoff through infiltration into a vegetated buffer. It was not originally designed as an erosion control BMP.

Turnout Berm and Trench Spacing: Spacing shall be based on the road grade as shown below:

Road Grade	Spacing between Turnouts
1-2%	200 feet
3-10%	150 feet
10%	100 feet

Construction Specifications

The receiving area below the ditch turnout trench shall be protected from harm during construction. The area must be revegetated before any flow is directed into it. A temporary diversion may be necessary in this case.

Ditch turnouts shall blend smoothly into the downstream receiving area via a level spreader without any sharp drops or irregularities, to avoid channelization, turbulence and hydraulic "jumps". Refer to the LEVEL SPREADER BMP for design

Ditch turnouts shall be constructed on undisturbed soil where possible. If fill is used it shall be constructed of material compacted to 95% of standard proctor test levels prior to seeding for that area not considered the seedbed.

Schedule of Installation

Ditch turnouts should be installed in conjunction with the ditch construction. Once soil is exposed, the turnouts should be immediately constructed and stabilized.

MAINTENANCE

After construction, ditch turnouts need to be carefully inspected for any signs of channelization and immediately repaired. It will be necessary to remove sediment from the ditch turnout trench when the swale is full and the structure is no longer functioning properly.



